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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/617,149

07/10/2003

Bruce Gregory Warren

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7590

08/01/2007

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EXAMINER

SONI, KETAN S

ART UNIT

PAPER NUMBER

2616

MAIL DATE

DELIVERY MODE

08/01/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/617,149

Applicant(s)

WARREN ET AL.

Examiner

Ketan Soni

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
- Paper No(s)/Mail Date 6/15/07, 12/7/06, 5/31/05.

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement submitted on Jun 15, 2007, Dec 07, 2006, and May/31/2005 have been considered by the Examiner and made of record in the application file.

Specification Objections

The Specifications of the disclosure is objected to because the term "919", and "944" on paragraph [0321] line: 2-3 for addressing Fig: 16-b and Fig: 16-c reference numeral should be suggested to change "1919" and "1944" respectively. For the prosecution of this application, examiner has considered these terms as addressed above.

Examiner has prosecuted this application with the assumption of the Specifications as mentioned above.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

Claims 6, 7, 8, 9, 13, and 15 are objected to because of the following informalities: Applicant is respectfully suggested to be spell out the abbreviations of "OPN", "SCSI", and "ALPA" in corresponding claim/s 6, 7, 8, 9, 13, and 15.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claim: 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim: 1 recites the limitation ".....transfer frames on both ports" in line: 11. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the Examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the Examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Black et al. (US 6614796 B1) in view of Global Engineering ("Fibre Channel-Arbitrated Loop (FC-AL-2) ", T11/Project 1133D/Rev 7.0 from IDS).

Consider **claim: 1**, Black et al. teaches a system for interconnecting Fibre Channel Arbitrated Loop devices (Fig: 2, N1, N2) comprising a first and second Fibre Channel Arbitrated loop switches (Fig: 9 @ 255, 257; in switch mode, loop switches are connected together as shown with the state machine-LPSM) including port logic (Logical state information is carried on each port in form of look up table, col: 8, lines: 14-18), connectivity apparatus (Fig: 4 @ 100 CROSSBAR SWITCH for connection of I/P or O/P of ports) and route determination logic (Fig: 4, 127), the route determination logic creating routes based on the receipt of certain arbitrated Loop primitives (primitives received for buffer management in nodes with routing lookup table, col: 15,

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lines: 2-5), but fails to teach a system having a first Fibre channel arbitrated loop switch, a second Fibre channel arbitrated loop switch and these first and second loop switches are interconnected by two or more FCAL links and transfer frames on both ports.

However in the same field of endeavor, Global Engineering discloses a system having a first and a second Fibre channel arbitrated loop switch and where two switches are connected by two or more links and transfer frames on both ports (Fig: Q.1, Page: 132: Switch port X and Switch Port Y are connected with links).

Therefor, it would have been obvious to a person of ordinary skills in the art at the time of invention was made to combine Black et al. with Global Engineering to obtain support for more users for the system. The motivation is to occupy more users in the system inexpensively.

Consider **claim: 2**, and as applied to claim: 1 above, Black et al. as modified by Global Engineering et al. discloses the claimed invention. Further taught by combination and specifically disclosed by Global Engineering the system for interconnecting Fibre Channel Arbitrated Loop devices wherein a first group of devices make connection through a first interswitch link and a second group of devices make connection through a second, different interswitch link (Fig: Q.1, Page: 132: Switch port X and Switch Port Y are connected with links).

Claims 3, 4, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Black et al. (US 6614796 B1)** in view of **Global Engineering ("Fibre Channel Arbitrated Loop (FC-AL-2) ", T11/Project 1133D/Rev 7.0 from IDS)** and further in view of **Soloway et al. (US 6532212 B1).**

Consider **claim: 3**, and as applied to claim: 1 above, Black et al. as modified by Global Engineering et al. discloses the claim 1. However, Black et al. as modified by Global Engineering fail to disclose the system for interconnecting Fibre Channel Arbitrated Loop devices of claim 1 further including a trunk-grouping table. In the same field of endeavor Soloway et al. discloses interconnection of Fibre Channel Arbitrated Loop devices of claim 1 using a trunk-grouping table (Trunking design for aggregation of links for routing traffic in Fibre Channel Switching environment, col: 1, lines: 66-67, and col: 2, lines: 1-5).

Therefore, it would have been obvious to a person of ordinary skills in the art at the time of invention was made to combine Black et al. as modified by Global Engineering for interconnecting Fibre Channel Arbitrated Loop devices with the method of Soloway et al. for using a Trunking design for the efficient use of ports. The motivation is to use Trunking feature for routing traffic efficiently in Fibre channel switching environment.

Consider **claim: 4**, and as applied to claim: 3 above, Black et al. further modified by Global Engineering et al. in view of Soloway et al. discloses the system according to

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claim: 3. Further taught by combination and specifically by Soloway et al. where the system for interconnecting Fibre Channel Arbitrated Loop devices of claim 3 wherein the table is in the router (Trunking is used for managing available communication bandwidth. This is done by monitoring various usages and then adjusts the tables in routing to move data, col: 6, lines: 24-34).

Consider **claim: 5**, and as applied to claim: 3 above, Black et al. further modified by Global Engineering et al. in view of Soloway et al. discloses the system according to claim: 3. Further taught by combination and specifically by Soloway et al. where the system for interconnecting Fibre Channel Arbitrated Loop devices of claim 3 wherein the trunk grouping table automatically learns the grouping (Trunking effects load balancing on links by monitoring various usages and then adjusts the tables from the knowledge gain or learned by monitoring and then adjusting the table in routing to move data, col: 6, lines: 27-34).

Consider **claim: 6**, and as applied to claim: 5 above, Black et al. further modified by Global Engineering et al. in view of Soloway et al. discloses the system according to claim: 5. Further taught by combination and specifically by Black et al. where the system for interconnecting Fibre Channel Arbitrated Loop devices of claim 5 wherein the table learns the grouping from the previous OPN from a Fibre Channel Arbitrated Loop device initiator (The destination address of each OPN is used to address a lookup table to determine if the destination node is local or not, Abstract).

Consider **claim: 7**, and as applied to claim: 6 above, Black et al. further modified by Global Engineering et al. in view of Soloway et al. discloses the system according to claim: 6. Further taught by combination and specifically by Global Engineering in the system for interconnecting Fibre Channel Arbitrated Loop devices of claim 6 wherein the device initiator is a SCSI initiator (Fig: J.1, Page: 122, SCSI command is sent by SCSI initiator).

Consider **claim: 8**, and as applied to claim: 7 above, Black et al. further modified by Global Engineering et al. in view of Soloway et al. discloses the system according to claim: 7. Further taught by combination and specifically by Global Engineering in the system for interconnecting Fibre Channel Arbitrated Loop devices of claim 7 wherein the SCSI initiator is a server (The server is also a SCSI initiator, Page: 122, line: 15).

Consider **claim: 9**, and as applied to claim: 3 above, Black et al. further modified by Global Engineering et al. in view of Soloway et al. discloses the system according to claim: 3. Further taught by combination and specifically by Soloway et al. in the system for interconnecting Fibre Channel Arbitrated Loop devices of claim 3 wherein the trunk grouping table contains information (Trunking design for aggregation of links for routing traffic in Fibre Channel Switching environment, col: 1, lines: 66-67, and col: 2, lines: 1-5; Also Trunking analyzes the data structure in the server for routing, col: 8, lines: 5-7). In addition Global Engineering discloses passing information on SCSI initiators (Server

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which is also a SCSI initiator learns which SCSI target has a data, Page: 122, lines: 13-18).

Consider **claim: 10**, and as applied to claim: 3 above, Black et al. further modified by Global Engineering et al. in view of Soloway et al. discloses the system according to claim: 3. Further taught by combination and specifically by Soloway et al. in the system for interconnecting Fibre Channel Arbitrated Loop devices of claim 3 wherein the trunk grouping table identifies a primary port to route frames (Trunking analyzes every entry of the data structure in the server for routing, col: 8, lines: 5-7). In addition Global Engineering discloses an initiator for Loop device (Fig: J.1, Page: 122, SCSI command is sent by SCSI initiator).

Consider **claim: 11**, and as applied to claim: 3 above, Black et al. further modified by Global Engineering et al. in view of Soloway et al. discloses the system according to claim: 3. Further taught by combination and specifically by Soloway et al. in the system for interconnecting Fibre Channel Arbitrated Loop devices of claim 3 wherein the trunk grouping table identifies a backup or duplicate port to route frames (Trunking analyzes every entry of the data structure in the server for routing, and depending on certain rerouting criteria, flow is rerouted to an alternate or duplicate route, col: 8, lines: 5-12). In addition Global Engineering discloses an initiator for Loop device (Fig: J.1, Page: 122, SCSI command is sent by SCSI initiator).

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Consider **claim: 12**, and as applied to claim: 3 above, Black et al. further modified by Global Engineering et al. in view of Soloway et al. discloses the system according to claim: 3. Further taught by combination and specifically by Soloway et al. in the system for interconnecting Fibre Channel Arbitrated Loop devices of claim 3 wherein the trunk grouping table identifies a duplicate port for a device (Trunking analyzes every entry of the data structure in the server for routing, and depending on certain rerouting criteria, flow is rerouted to an alternate or duplicate route, col: 8, lines: 5-12).

Consider **claim: 13**, and as applied to claim: 3 above, Black et al. further modified by Global Engineering et al. in view of Soloway et al. discloses the system according to claim: 3. Further taught by combination and specifically by Soloway et al. in the system for interconnecting Fibre Channel Arbitrated Loop devices of claim 3 wherein the trunk grouping table identifies a route (Trunking analyzes every entry of the data structure in the server for routing, col: 8, lines: 5-7). In addition Global Engineering discloses that this can be an initiator ALPA (ALPA used for initialization, 10.5.4.1, Page: 84).

Consider **claim: 14**, and as applied to claim: 3 above, Black et al. further modified by Global Engineering et al. in view of Soloway et al. discloses the system according to claim: 3. Further taught by combination and specifically by Soloway et al. in the system for interconnecting Fibre Channel Arbitrated Loop devices of claim 12

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wherein the duplicate port is used as a failover port (Trunking analyzes every entry of the data structure in the server for routing, and depending on certain rerouting criteria, flow is rerouted to an alternate or duplicate route. Flow is rerouted to an alternate route for redundancy, col: 8, lines: 5-12).

Consider **claim: 15**, and as applied to claim: 3 above, Black et al. further modified by Global Engineering et al. in view of Soloway et al. discloses the system according to claim: 3. Further taught by combination and specifically by Soloway et al. in the system for interconnecting Fibre Channel Arbitrated Loop devices of claim 3 wherein the information about the SCSI initiators includes one or more of the following: ALPA address for the initiator (Fig: J.1, Page: 122, SCSI command is sent by SCSI initiator and port addressed by SCSI initiator). In addition Global Engineering discloses assigned primary trunk group to route the frames, duplicate port to route the frames incase of an error with the primary trunk group (Trunking analyzes every entry of the data structure in the server for routing, and depending on certain rerouting criteria, flow is rerouted to an alternate or duplicate route, col: 8, lines: 5-12).

Conclusion

The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

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- Berman (U.S. Pub/Patent # 6470007) discloses: Interconnect system for fibre channel arbitrated loop including private loop devices.
- Chan et al. (U.S. Pub/Patent # 6243386) discloses: Fibre channel learning bridge and protocol.
- Kranzler, David A (U.S. Pub/Patent # 6396832) discloses: Method and apparatus for optimizing a switched arbitrated loop for maximum access fairness.
- Berman, Stuart B. (U.S. Pub/Patent # 6,118,776) discloses: Fibre channel arbitrated loop bufferless switch circuitry to increase bandwidth without significant increase in cost
- Black et al. (U.S. Pub/Patent # 7,009,985) discloses: Fibre channel arbitrated loop bufferless switch circuitry to increase bandwidth without significant increase in cost
- Coffey, Aedan Diarmuid Cailean (U.S. Pub/Patent # 2002/0044561) discloses: Cross-point switch for a fibre channel arbitrated loop
- Fiore, Edward J. (U.S. Pub/Patent # 6,999,460) discloses: Arbitrated loop port switching
- Wong et al. (U.S. Pub/Patent # 6,324,181) discloses: Fibre channel switched arbitrated loop
- Gallagher et al. (U.S. Pub/Patent # 5,619,497) discloses: Method and apparatus for reordering frames

Any response to this Office Action should be **faxed to (571) 273-8300 or mailed to:**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ketan Soni whose telephone number is (571) 270-1782. The Examiner can normally be reached on Monday-Thursday from 7:30am to 6:00pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Vanderpuye, Kenneth can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028. If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.

Ketan Soni

ks

Jul 25, 2007.



KENNETH VANDERPUYE
SUPERVISORY PATENT EXAMINER